The Mining Journal
RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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LAW INTELLIGENCE.

HIGHLY IMPORTANT RAILWAY DECISION.

M'MAHON *v.* THE NORTH UNION RAILWAY COMPANY.—The long expected decision in this case has been published, by which the sum of 13,700*l.*, with full costs, has been awarded in favour of the plaintiff. It had been referred to the sole arbitration of Mr. John M'Neill, the eminent engineer, and we believe the following to be an accurate summary of the case:—The plaintiff was the active partner in the long established and highly respectable well-known firm of Henry, Mullins, and M'Mahon, of Dublin, the extensive undertakers for public works; some years since they took several extensive contracts on the North Union Railway, which were satisfactorily executed, and upheld, according to the term of this bargain, for two years after the public opening. At the end of that time, which expired in October, 1840, the measurements and accounts were gone into by Mr. Vignoles, the engineer-in-chief of the company, who certified, in the usual manner, the amount due to the plaintiffs, and, by virtue of the powers vested in him by the contract as sole *referee*, and in the exercise of his judgment and equity, awarded the balance to be paid. Contrary to all usage, the company refused to abide by the award of their own engineer, and thereby threw a momentary reflection on the professional character and opinion of Mr. Vignoles.

After several vain attempts at a compromise, the plaintiff brought his action, but, when *ripe for* trial, it was *referred*, by a rule of court, about a twelvemonth since, to Mr. M'Neill, who entered into the closest scrutiny and examination of the subject. The whole of the working drawings, and monthly and periodical statements, were gone through, item by item, and the original estimates and calculations produced to him, and repeated sittings were held, during many days, at various intervals, when the arguments and explanations on both sides were thoroughly and patiently heard. Mr. Vignoles, and all his assistants on the works, were examined, and also Mr. Buck, an engineer selected by the directors of the North Union Railway Company, to sustain their views of the case. The amount now awarded by Mr. M'Neill exceeds that given by the company's engineer, and is several thousand pounds less than what the plaintiff was at one time disposed to compromise for, to avoid litigation. This decision, made after such a deliberate and formal inquiry, by so competent an arbitrator, while it does justice to the plaintiff, must be a satisfactory assurance to Mr. Vignoles, that his original decision was based on the strictest principles of equity, notwithstanding the implied opinion of the directors of the North Union Railway.—The costs will be very heavy.

LECTURES ON CIVIL ENGINEERING, WITH PRACTICAL ILLUSTRATIONS.

BY PROFESSOR VIGNOLES, C.E.

On Wednesday, the 9th inst., Professor Vignoles delivered his Introductory Lecture to the second course of lectures "On Civil Engineering." He stated that, having in his first course of lectures touched upon several of what he might call the cardinal points of civil engineering, he was then about to enter the second course, for which (according to previously concerted arrangements) one only of the numerous branches of this profession had been selected as the theme, with a view of entering considerably into its details, rather than to discuss in a more general manner a variety of subjects, which, though, perhaps, equally important, equally interesting and useful, and equally necessary for the student, could not be thoroughly investigated in the course of a single session. In this introductory lecture he would, however, touch concisely on the wide topic of the internal communications of civilised countries, as falling within the scope of the theories and practice of a civil engineer, treating them here as on a general theme; but the subsequent discourses to the class would consist of the details of that more modern branch of internal communication, of so much interest in the present day—the Railway System. It had been well and truly remarked by an enlightened observer, that the great characteristic feature of the present age was the appreciation of the value of time. In an eloquent introduction to a pamphlet, on one branch of internal communication, the author expressed himself in terms which he was tempted to quote, as an appropriate preliminary to his own remarks:—"In that career of improvement which has distinguished the last thirty years, beyond, perhaps, any previous history of the world, and in which the sum of the vast ameliorations effected, in all that relates to the condition of man, is not less striking than the rapidity with which their details have followed upon each other, one important lesson seems to have been in an especial degree impressed upon those engaged in the pursuits of industry, and upon the commercial and manufacturing classes in particular—they have been effectually taught to appreciate the value of time, and to apply to its use a degree of rigid and judicious [illegible]

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old Roman fashion, on the mathematical axiom, that a straight line is the shortest that can be drawn between two points. This would not make the most commodious road—hills must be avoided, towns must be resorted to, and the sudden bends of rivers must be shunned. It is not suggested that roads should be made serpentine, merely for the sake of the picturesque, but the skill of the engineer is to be exerted in avoiding irregularities of ground and irregularity of inclinations, and he will generally find, that a strict adherence to a straight line is of much less consequence than is usually supposed, even in actual distance over long lengths. It was well known that a blind man was, some years ago, advantageously employed through Yorkshire and Derbyshire, in laying out roads through those hilly counties. He followed the streams which made their way amongst the hills, and, by finding out the chords of such arcs, or bends of the river, as passed on practicable ground, he succeeded in his attempts. It is obvious that, when the arc described by a road going over a hill is greater than that described by going round it, the circuit is preferable; but it is not known to the ordinary road surveyor, though it ought to be ingrafted in the mind of the engineering student, that, within certain limits, it would be less laborious to go round the hill, though the circuit be much greater than that which would be made in crossing it. Thus, when a hill has an ascent of no more than one foot in thirty, the thirtieth part of the whole weight of the carriage of the load, and of the horses, must be lifted up, whilst they advance thirty feet. In doing this, one thirtieth part of the whole load continually resists the horses' draught, and thus, in drawing a waggon of six tons weight, a power to overcome resistance equal to the force of two additional horses must be exerted. But what is here said of level roads must not be strained into an assertion that a perfectly level road is always the best for every description of draught or load; alternations of rising and level, or of falling ground, are serviceable to horses moving very swiftly; the horse has time to rest his lungs and different muscles, and of this the experienced driver knows how to take advantage; but while this qualification is made, care must be taken not to strain it too much, as did one provincial road maker, who very ingeniously carved a naturally quite level road into a series of short billowy undulations, which his successor had to level again. Without travelling through the whole history of road improvements, he might state that Telford, in England and Scotland; and in Ireland, Nimmo, Griffiths, and Edgeworth, brought the laying out and construction of roads to the present perfection, and, of the writings of the latter, he had availed himself in many of the preceding observations. The many roads of Great Britain were just arrived at almost the highest degree of perfection, when again the increased appreciation of the value of time led speculators to conceive, and our engineers to realise, the idea of the employment of iron surfaces for roads. Before, however, following the gradual transit of roads into railways, he would make a few observations on the other branch of internal communication—the navigable river and the canal.

The tastes and speculations of the last fifteen years have been so exclusively devoted to railways as the fashionable mode of internal communication, that canals have almost been lost sight of, and it is now nearly forgotten by the modern speculator, though it may be interesting to the young engineer to be informed, that fifty years ago the mania for constructing canals and improving river navigation was as great, even if not greater, than the enthusiasm displayed very recently about railways; Parliament was then deluged with applications to grant Acts of Incorporation for canal companies, the press teemed with canal publications, the shop windows were filled with canal maps and sections, and the papers and periodicals with advertisements and paragraphs on canalisation. Canals appear to have been duly appreciated in ancient times, and used for the purpose of drainage, irrigation, supply of water, and navigation. In his former introductory lecture he alluded to the canal of Xerxes, at the foot of Mount Athos—an attempt which is stated to have been renewed by the Roman emperors in later ages. A canal navigable for large boats was constructed by the Ptolemies between the Nile and the Red Sea, though it is doubtful whether the state of engineering skill in those days permitted an actual junction to be made; this grand navigation was re-opened by the caliphs in the seventh century. Traces of it are still existing, and its termination in the most easterly branch of the Nile was discovered by M. Bertier, in 1797, and is still open. Under the enterprise of the present ruler of Egypt it may yet fall to the lot of an English engineer to reopen this magnificent canal. Herodotus assures us that the Nile was in itself, or by lateral canals, navigable by the ancient Egyptians for 500 miles above Alexandria, and the Delta of the Nile was formerly like modern Holland, filled with canals. The Romans made more than one canal in England; the most remarkable was that called the Caerdyke, which united the river Nene, a little below Peterborough, with the river Witham, three miles below Tiverton; it was forty miles long, and fifty years since appeared distinct enough, and must have been originally very deep; and what led to the impression that this canal was used for the purpose of internal communication, was that there was a continuation of this canal from Lincoln to the Trent above Gainsborough by the Foss Dyke, which [illegible]

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its true results, and then they would find that prudence, caution, economy, judgment, and the highest intellectual gratification follow closely in its train; for, to apply the words of Mr. Booth, the intelligent secretary of the Liverpool and Manchester Railway, and one of the fathers of the modern railway system—"The contemplation of what is passing in England (alluding to the first cost of railways) must not be without its lesson, for, in all countries, and under all circumstances, it is an object worthy of a statesman, to prevent the reckless waste of the national means, and to give a right direction to the public expenditure." And shall it be said that it is not equally worthy of an engineer? What are the aggregate subscriptions of associated and incorporated bodies of individuals but great portions of the "national means," which should not be wasted by the statesman or by the engineer? What are the monies invested in railways but a part, and, in the United Kingdom, a most important part, of the "public expenditure?" And is it not at once the duty, as it ought to be the pride, of an engineer to give that expenditure a "right direction?" Let the maxim he had laid down be duly followed out, and that duty would be accomplished. The learned Professor continued, by stating that, even at the risk of having motives attributed, which he should be unworthy of public or private estimation if he entertained for a moment, he would call the attention of the student to an instance of great expenditure on railways. The perfect completion in the manner contemplated of the internal communication by railway from London to the Sussex coast, a distance of little more than fifty miles, will amount, in the aggregate, to nearly four millions sterling. Is not that a reckless waste of the national means? Is that a right direction of public expenditure? Will not the public, in some way or other, pay for that?—the subscriber or the traveller, or both? To quote the words of an intelligent and experienced railway man—"With such results before us, would it not be almost criminal not to endeavour to secure the advantages of a better system?" The average cost of the railways in England has been very nearly 30,000*l.* per mile. The cost of future lines must not be more than one-half of that sum, or it may be considered that there is an end to the extension of the railway system. The Professor stated that it would be his attempt to explain, in the course of his lectures, his ideas, that such a reduction in the expense might easily be made, and he would show that they were founded upon practical experience. The profession would be greatly aided, and the public vastly benefitted, if the railway companies and their engineers would publish the detailed accounts he had asked for, to serve as a beacon, for which all would be very grateful; and it was his deliberate opinion and recommendation, that if they would not do so, Parliament ought to give the railway department of the Board of Trade powers to enforce such returns.

The total amount of capital invested in the railway speculations of this country, is probably little short of 50,000,000*l.*, and the total extent of lines about 17‹0 miles—most of which are now completed. This may be said to be the creation of the last fifteen years. The total length of navigable canals in Great Britain is nearly 2500 miles; they were chiefly formed in the last 40 years of the preceding century. The capital invested in this branch was about 30,000,000*l.*, with an annual expense of about 30*l.* per mile. In addition to canals, there are about 1500 miles of navigable rivers. The turnpike roads of England and Wales are stated, in official returns, to be nearly 20,000 miles in extent, executed at an expense of at least 20,000,000*l.*, and maintained at an expense of about 1,750,000*l.* per annum, and all formed within little more than a century, exclusive of other highways, in length about 100,000 miles, with an annual expense of 12*l.* or 13*l.* per mile, or 75*l.* per mile for maintenance. The extent of executed railways in the United States of America appear to be about 4‹0 miles, executed within the last fifteen years, at a cost of about 8,000,000*l.*, or about 300*l.* per mile; most of them are single lines, and it is stated that the average net income has been about 5 per cent. per annum. The extent of railways in Belgium is now about 200 miles, executed at a cost of rather more than 1,500,000*l.*, or about 80‹0*l.* per mile; most of these are single lines, and have all been executed within the last ten years.

The average annual expense of maintaining the railways of England (exclusive, of course, of moving power, carrying and managing establishments, &c.) appears to be from 200*l.* to 300*l.* per mile per double way; but on the Dublin and Kingstown Railway, where the system of longitudinal timbers for the upper works has been completely carried out, the same heads of expense are now reduced to less than 80*l.* per mile per annum, with a locomotive traffic over that railway as great, if not greater, than over any line in Great Britain. The average expense of the canal maintenance in this country seems to be 50*l.* per mile per annum.

The Professor concluded, by stating that he would close his somewhat desultory discourse, by calling attention to the fact, that the first elements of the amelioration of internal improvements, he would not say internal communication, which arose in this country, date from the period of the introduction of the Poor Laws into England, the effect of which has been to compel the rich to find employment for the poor, or to support them, and thus has been carried out the great principle of self-dependence, in separate districts, to work out their own improvements. Certain it is, that, from the passing of the Act of Elizabeth, which instituted a legal maintenance for the destitute, and, by making mendicity a crime, swept the hordes of beggars, idlers, and sorners, from the face of the land, this country took a start, and, overtaking in improvement the other states of Europe, then far in advance of her, has since pursued that successful and continued march of amendment of her internal communication, which form so remarkable a feature of England, proving her wisdom and proclaiming her prosperity. He begged that, with his previous cautions, the students would remember that the agent for the carrying out of such improvements, past and to come, has been, and he trusted long would continue to be, the civil engineer.

MINING NOTICES.

[Under this head we purpose collecting such paragraphs as may appear in the provincial and other Journals, having reference to discoveries and improvements in mining operations at home and abroad. It is hardly necessary to observe, that we must not be considered to admit the correctness of the information conveyed, which, in too many instances, requires cautious investigation—the sanguine expectations of parties in some instances, and the want of honesty in others, throwing a degree of responsibility on a Journal in giving publicity to reports, which we do not intend taking upon ourselves.]

ADRA LEAD MINES, SPAIN.—The silver produced by the lead extracted from the Adra lead mines, during the month of December, weighs 6417 marks 5 oz., and the chances are that the future proceeds will be much more considerable.—*Herald.*

VALUABLE DISCOVERY IN CUBA.—Five copper mines are stated, in the last advices from Havana, to have been lately discovered near Bohia Honda, in Cuba; they are said to contain rich veins, and a company has been already formed for working them.

MINE ACCIDENTS.

West Wheal Jewel.—As Stephen Davy, aged twenty-one years, was descending the engine-shaft in West Wheal Jewel Mine, he fell out of the ladder, a depth of about twelve fathoms, and received a dreadful wound on his head, of which, after lingering about two hours in great agony, he expired.

North Towan Mine.—A frightful accident happened at North Towan Mine, on Tuesday last. A young man, named John Mitchell, who was working in the mine, asked a man who was near him if he had ever seen any person climb up by the capstan rope; the man replied no, nor did he wish to. Mitchell then said "Well, then, you shall see me." He then ascended, and suspended himself by the legs, head downwards, directly over the engine-shaft. On endeavouring to regain his proper position, he slipped his hand, and was precipitated to the bottom of the shaft, in which there were five fathoms of water. He was taken up in a few hours, of course, lifeless, with his back broken and other injuries.

Cyfarthfa.—A miner, named John Williams, working in Coed-cae-Winch, Cyfarthfa, was killed last Tuesday, by a quantity of mine, or a large stone falling on him, crushed him to death in an instant. Another workman was severely injured in the same level lately.

Lisburne Mines.—An accident, which terminated fatally, occurred to a young man named David Hughes, while working at Level Fawr, Lisburne Mines, on Saturday, the 13th inst. It appears that while the deceased was "tamping" a hole, in which some powder had been inserted, the combustible exploded prematurely, by which his leg was fractured, and his head and side severely wounded; he lingered till next day, when he died. On Wednesday, the 16th inst., an inquest was held on the body, at the Star, Yspytty Ystwith, before Rice Williams, Esq., coroner, and a respectable jury. Mr. William Evans, surgeon, of Aberystwith, was examined, and stated that he had viewed the body, and, in his opinion, the wound on his head and side were sufficient to cause death.—Verdict, "Accidental death."

A few days ago, as some men were ramming in the powder to blow up a portion of the rock of the tunnel for the Paris and Rouen Railway, in Rolleboise, an explosion took place, and the iron rod, which had been used as a rammer, entered the breast of one of the workmen and killed him. Another man had his leg broken, and a third was severely injured.

On Monday forenoon, one of the inclined plane ropes of the Dalkeith Railway broke when hauling up a train of loaded waggons, but the self-acting stopper, used on this line, prevented any bad consequences, except the delay of the twelve o'clock passenger train for fifteen minutes, while the waggons were being taken to the bottom of the plane, in order to be drawn up on the opposite side. This contrivance has been used for many years on this railway, and in every instance has proved thoroughly effectual.

MACHINERY TO ASSIST THE DESCENT AND ASCENT OF MINERS.—On Saturday week, the adventurers of the Tresavean Mine met, by appointment, some of the committee of the Polytechnic Society, to consider some alterations in the plan originally proposed for raising the miners from their labour. These alterations consist of a greater length of stroke, so that the rods move now through twelve feet instead of six as they did at first. The stages being still at the distance of six feet from each other, and the change taking place only at every other one, the men are enabled to ascend and descend at the same time without interfering with each other. It is also proposed to fix a screen around each platform to give additional security, and to fix permanent ladders in the shaft, so that at any time the men can pass from the rods to the ladder in the event of any derangement of the machinery. It is intended to erect a steam-engine to work this machine instead of water power, as is at present employed. The alterations proposed by Mr. Loam were highly approved of, and will be immediately adopted. Mr. Loam expects to complete the machine to the bottom of the mine by October next. The adventurers calculate that the saving of time which will then be effected, will be so great, that within a year or two the first outlay will be entirely reimbursed.

GEOLOGY.—A NEW SYSTEM OF PHILOSOPHY.—No. V.

BY HENRY GRAHAM MONTAGUE, ESQ.

THE PHENOMENA OF THE OCEAN.

How beautiful is Nature!—how infinitely varied are all her works!—in life, in death, how beautiful! Behold her in the ever-varied varying forms of life—in all life furnishes to view—in each a brief or luminous display of truths—in each exactitude and harmony of form—in each the aptitude of capacity and power—her master-work, Intelligence! Behold her in the dying and the dead, amidst ten thousand relics of the past, the grave-yard of departed form, and yet the fair productive fount from whence life issues in a fairer, nobler garb! Behold her in the changed and changing scene, in the bud, the blossom, and the tree, in mountain, hill, and dale, in streams, in rivers, in the dark abysses of the deep—in all, how beautiful! Her touch is redolent with life—breathes life in all around—her hope is happiness, and her joy is in Intelligence, directing, comprehending all her ways! How beautiful is Nature—the same yesterday, to-day, and for ever!

In the preceding article I have enumerated the leading phenomena of strata produced in and by countless organic creatures, varying in their organical structure, capacities, and powers from each other; yet, although so numerous and so widely diversified in their living state, the proximate principles and compound results in the ocean strata, or disseminated locally or generally within the waters, are comparatively few, for the proximate principles and compounds known to be constituents of the animal body, are few in number—some of them being held in common by all, others peculiar to orders, species, and genera. In the living organic animal the matter of which it is composed is one and peculiar, the living principle constituting a portion of the whole, and governing the disposition of matter: thus, for instance, in the simplicity of the animal structure ANIMAL MATTER is developed, by the triple union of hydrogen, oxygen, and nitrogen, within a prescribed medium, and in definite proportions of each elementary principle; and this matter is, in union with water, the sole constituent of numerous orders in the lowest link of the descending scale of animal life; but the body deprived of its vitality, this animal matter becomes another result, by a new adjustment of its parts and quantities, necessarily occasioned by the cessation of the vital mechanical action. Of the substance generated by life, nothing is lost in death, the sum of animal matter may still cohere in its parts and abstract from the medium in which it is placed, the force of affinity now supplying the place of the living principle, or it may separate in atomic quantities, or it may volatilise, and in this state be generally diffused through the waters, but, in either case, the primary elements are lost in the new products.

The matter of the ocean, in its primary qualities, is spread before us, and, from the commingled wreck of myriads upon myriads of organic bodies, locally disposed in groups and families, or blended confusedly together, as the accidents of circumstance may determine, we abstract the history of the past, and the elementary principles, proximate principles, and compounds of which they are in aggregate composed. It is, indeed, singularly beautiful to observe the countless changes, and modifications of change, the capacities, powers, attributes, quantities, and qualities proceeding from the one common fountain—life increasing in its quantities as it rolls onward in the trackless paths of eternity, increasing in its qualities and powers by multiplication of qualities and powers, its end being lost sight of in the refulgent glory of Intelligence—to see matter uniting with matter, the nature of the inorganic compound being determined by the organic compound, or compounds, generated by the countless living systems, the one and the other similating, and new results being produced in the numerous combinations of proximate principles and compounds with the elementary principles. Life is produced in its simplicity of organisation by the triple union of hydrogen, oxygen, and nitrogen, and in the progressive development of organic bodies are developed the gases, chlorine, flourine; the non-metalic bodies, solids and liquids, phosphorus, bromine, iodine, and carbon; the metallic bodies, sodium, calcium, and magnesium; and the metal, iron. Besides these there are numerous compounds, gaseous, aqueous, and consolidated, generated in oceanic orders, genera, and species, which, on the cessation of life, decompose, and their integral parts unite with other compounds, or are returned to the elements from whence they were taken.

Of the twenty-nine known metals, there is but one strongly marked in the oceanic, animal, and vegetable kingdoms, but the proximate compounds being the seeds, or germs, of development, are, in the commingled matters, awaiting local influences and local unions to call them into being. Such is the law of necessity which regulates Nature in the form and disposition of matter, the forthcoming result, and its nature and qualities, depending on the nature and qualities of results previously manifest, and the nature and qualities of the influences exercised thereon by the elements. In the after production of terrestrial organic bodies, the metals contemporaneously form, sometimes having oceanic matter for their basis, at other times terrestrial, at other times being compounded of both. Dumesneil tells us he abstracted silver from the scales of the carp; and other analytical chemists have abstracted gold, silver, and other metals, from terrestrial vegetable bodies; but in the production of these metals in the mineral kingdom, Nature acts not by violence, their production being gradual, and depending on the fortuitous circumstances of locality and temperature; in like manner with the seed and the egg, a certain temperature and local association being essential to the development of both.

In all the combinations of organic and inorganic matter, the governing force of action and local and general disposition is oxygen; it is the principal source from whence life is derived, and of light and heat—the first being developed by the mechanical and mathematical adjustment and continuous movement of its quantities within a given medium; the second being manifested by simple compression of its parts; it constitutes the bulk of aggregate of animate and inanimate bodies, and is absolutely necessary for the production of both.

Carbon is generated by the organic structure, being manifested by the living action, and chemically manifested in the decomposition of bodies, but, from the immense accumulations of this proximate compound in the earth, the waters, and the air, and from being unable to analyse it, chemists have been led to suppose it a primary principle, and equally necessary with the three primary principles for the production of animate and inanimate nature. That it is essentially necessary for the production of numerous oceanic and terrestrial bodies, is undoubted; but a slight review of the phenomena of production of organic forms, is sufficient to assure us that it is not of primary qualities, for, in animals of simplest organisation and of primary qualities, carbon is non-manifest, but it is known to be generated in animals of more complex structure, particularly in the vertebrated animals, and finally in terrestrial organic bodies; the epoch of its development in large quantities is also distinctly marked out in many localities in the carboniferous systems. In and throughout the strata in which it abounds, each strata also exhibit the like abundance of animals and vegetables, which, living, generate carbon. In the lower depths, in formations of sands and sandstones, it wholly disappears.

Every era of production marks the increase of certain proximate principles and compounds, the same being locally or generally diffused: thus it is the ocean, in the present day, is found to be so variable in its qualities; the primary compound water uniting in its medium the etherial and gaseous fluids of myriads of existences, their bodies and united qualities, as also the bodies and united qualities of past generations, constituting the sum of oceanic matter; and this incessant change of qualities of the ocean waters has the tendency to cause orders and genera (when aided by other local influences) to diverge into species, the organic body receiving one or more of these compounds within its system, and the same gradually uniting therewith, whereby a new disposition takes place in the adaptation of parts, new organs are developed, and new compounds generated. Again, every era of production necessarily adds to the quantities of consolidated matter, and abstracts from the aqueous medium, and, by increasing the specific gravity of the earth, lessens its distance from the sun: thus, in the increase of heat, and in the increase of consolidated and consolidating matter, and of gaseous qualities, the waters are acquiring additional powers of organic development; the progressive increase of the earth being general, but the sum of local increase being variable and inconstant.

As the gaseous compounds are progressively generated, so the sum of each perfect result increases, passing through the earth, the waters, and the air—affecting and affected—uniting or united—changed or changing—as the accidents of union may determine; thus, we find carbon sometimes in vast accumulated masses, and in every degree of union and solidification, from the aeriform to the liquid—from the liquid to diamond, the most ponderable of all bodies. In numerous instances, carbon is decomposed by local affections, the whole carbonaceous body becoming converted into silica; it may be said, that the silicic acid replaces the carbon, but observation negatives this supposition, and, indeed, it is much to be doubted whether the result—carbon—composes a part of the organic body while the living action is manifest, for the results produced in the decomposition of organic bodies are results of the dead, and not of the living matter; and the result proceeding therefrom is not uniformly constant, but depends on the influences affecting the body after the cessation of vital action. This is exemplified in SULPHUR, which Dr. Kane, the learned professor of natural philosophy, states to be one of the six elements which form almost exclusively the constituents of animal and vegetable bodies. Now, although the proximate principles, which, in union with oxygen, produce sulphur in the fossil and mineral kingdoms, compose a portion of the animal and vegetable structure, yet is it certain the compound body, termed sulphur, never exists within the living organic body, but its presence, in quantities, is alike inimical to both. It is developed in the decomposition of bodies, under certain local combinations and local affections, and not necessarily manifest, except under those local influences. It is chiefly developed in the bituminous state of animal matter, and most abundant in the carboniferous formations, being, also, a necessary adjunct to the mineral beds. In some localities of the earth, particularly in virgin soils, seated within the tropical band, it is disseminated through local beds and stratum in its gaseous form, and is sometimes abstracted from these and other soils by volcanic action. Phosphorous, another of the enumerated elements, is certainly developed in the organic body, being secreted by the functional operations of the living principle within the bodies of numerous orders and genera, in the bones of vertebrated, and in the fluids of both vertebrated and invertebrated animals, but the one and the other are compounds, proceeding from admixtures of primary and proximate principles, and cannot, correctly speaking, be classed as elements. It is worthy observation, that, in depositions of matters primarily abounding with phosphoric acid, in their entire decomposition the phosphoric acid disappears, and sulphur is developed, and it is from this cause that phosphorus is so seldom found in rocks formed almost exclusively of bones and other skeleton portions of animals, which, previous to decomposition, contained much phosphorus, and of which APATITE is one of the exceptions; this, together with its affinity to sulphur, and the strong similarity it bears to that compound, may lead us to suppose that the phosphorus, under particular local affections, passes into the form of sulphur, taking some compound body as its basis.

Chlorine appears to be almost exclusively oceanic, being generally diffused in the mucilage of the oceanic animal, in the form of muriate of soda; it is a gaseous body, and in this compound state is given forth previous to, and after, the cessation of living action, and unites with the aqueous medium, the sum of its presence being locally diffused; its acidifying qualities are neutralised by the alkaline basis—soda—and, assuming the crystalline state, it is in this form locally disposed over the earth, forming strata, hills, and sometimes mountains, or united or uniting with other mineral compounds; but, although a product of the ocean, it readily enters into the organic composition of terrestrial bodies, and, by its presence, produces new results therein. Chlorine, phosphorus, and sulphur, appear to have a common basis with bromine and iodine—the latter entering largely into the composition of sea water, being secreted by fuci and other oceanic bodies. Chlorine, bromine, iodine, and fluorine, perform their respective parts in the economy of organic bodies, having a strong analogy to each other, and to oxygen; they combine with almost all the simple bodies, the base of all of them being one, but differently disposed in each, with the elementary and proximate principles.

Sodium and magnesium are both of oceanic origin, forming a component part of numerous oceanic animals, particularly the invertebrated orders, being disposed within the mucilage, and given forth to the waters in union with chlorine, carbon, calcium, and other compounds; they are abundantly developed in tropical seas, and in the virgin lands attached to those seas where the rains are unfrequent, covering the upper surface of the soil, in beds and large calcareous masses.

Gelatine and albumen are also, as is well known, oceanic organic matter, the former being the sole compound substance of numerous orders and genera, constituting the white and soft parts of the flesh of fishes, the flesh of mollusca, and the cement of their shelly covering; it is equally abundant in terrestrial animals; it readily absorbs water, and, while the living action is manifest, holds, in union, animal matter, phosphorus, soda, and calcium; albumen is essential to the constitution of numerous vertebrated and invertebrated animals, uniting, in like manner, with gelatine, other oceanic compounds. It is also one of the chief constituents of terrestrial animal life, and is found in abundance in many vegetable bodies. Both are compounds of the three primary elements, and the proximate compound, carbon, in varying proportions of each.

One of the most important compounds secreted by oceanic organic bodies, by the living action of the body, is calcium, or the earth of lime, the sum of its accumulations depending on the local action exercised on the medium in which it is produced, heat and freedom from local disturbance being essentially necessary to produce the vast zoophitic aggregates; thus it is the phenomena of production of madrepore and other calcareous orders is confined within the verge of the tropical band. In the invertebrated animals, particularly the infusoria and other minute orders, the direct agency of atmospheric heat is a necessary auxiliary to the secretion of this earth; but in the vertebrated animals having red blood, the natural heat, and consequent increased acceleration of the circulation of this fluid, and increase of temperature sufficient for its secretion and increase, without the direct agency of the sun. That the calcium is secreted by the animal, assisted by atmospheric heat, is attested by Nature, and confirmed by analysis; the compounds which produce the result within the living system are abstracted from the waters, but the result is of the body, and from the body the result proceeds. In the organic body it is always found united with carbon or phosphorus, coating the cartilagenous membrane of invertebrated animals, or forming in union with gelatine and albumen, the skeleton of the vertebrated animals being absolutely essential to the maintenance of form and condition of numerous orders and genera. Calcium, in like manner with carbon, is generally diffused through the mineral kingdom, constituting a large portion of its bulk of aggregate; it is also disseminated in the waters, and combining with carbonic acid aggregates in its quantities, and falls by its specific gravity to the bottom of the waters; thus the ocean bed is the recipient of the carbonate of lime, and the grand receptacle where it continually accumulates with the accumulation of organic matter, being preserved within the bed by the forces of affinity—cohesion and lateral pressure.

The incessant increase of this compound body is manifest in every portion of the surface of the ocean bed, the sum of local increase, as previously observed, depending on the organic bodies existing therein, and not on supplies from springs or other sources undiscoverable by us. Life is produced by local influences, it secretes calcium by local influences, giving peculiar character to its formations; if, in some places, it may be assumed that the lime thus secreted is supplied to the ocean waters by the action of running streams, still it is evident that the supply must fall infinitely short of the quantities accumulated and accumulating in the ocean bed; and, on the other hand, the vast formations going on beneath the waters of the Pacific, Southern, and Indian Oceans, and in the Red Sea, are wholly removed from these influences. The cause of production of calcium is the living principle manifest in defined action, produced by defined local influences, for did animals secrete it simply by abstraction from the medium in which they exist, then would its presence be manifested by general, instead of local, distribution in bodies, and by general distribution over the whole bed of the ocean waters, without reference to temperature or local influences.

Every mass of lime, whether known as carbonate or sulphate, united or disintegrated, containing forms and bodies testifying their organic origin, or in atomic particles, or of crystalline texture, wherein the organic structure is no longer to be distinguished, all originate in, and proceed from, organic existences; the aggregate mass may be acted upon by flood or by fire, it may be disseminated among bodies innumerable, but, of the matter produced, nothing is lost. Sodium, magnesium, and the other oceanic compounds, are also manifested after cessation of living action, and in the decomposition of the body, the aqueous medium being the fountain from whence they proceed, and the grand receptacle to which they return, some finding their way to the ocean bed, others being locally or generally diffused through, and uniting mechanically with, the waters; thus, one part of the sea holds in solution a much larger portion of sodium and muriatic acid than another portion, and the same observation applies to all matters locally or generally diffused, the sum of matter in its depositions being ever variable and inconstant. In the present era of production, oceanic matter and terrestrial matter of necessity are held in union together in most localities of the waters; the terrestrial matters being distributed over the ocean bed by the moving forces manifest therein, as well as by general and local catastrophes.

It cannot, therefore, be a matter of surprise, if on analysis of bodies primitively oceanic, terrestrial matters are found therein, seeing that matter in its disposition is always influenced by the antagonist forces of motion and specific gravity; but the presence of such matters must not prevent the analytical philosopher from drawing the broad line of separation between the one and the other, or from classifying the phenomena common to both, or proceeding from the union of one with the other in quantities and qualities. Considering, indeed, the importance of this classification, it is to be regretted that age after age should have passed away without the least attention having been paid to truths so strikingly manifest to even common observers.

The next undecompounded body I shall notice as being characteristic of organic action is SILICON, the base of albumen and gelatine, and replacing those products in the fossil and mineral kingdoms. It is a component part of the consolidated texture, as also the slime of oceanic animals and vegetables, and in rare instances it exists within the organic body almost in a state of purity, as evidenced in hyalonemidæ, or GLASS ROPE—a beautiful specimen of which may be seen in the British Museum. This very important compound, whose adhesive qualities gives origin to such a vast number of compound aggregates, and which constitutes the bulk of aggregate of the earth, is developed in the mineral kingdom on the decomposition of bodies, or in the still united body after living action has ceased; the nature of the bodies and the nature of the local influences determining the result. Its primary development is in organic bodies of simple gelatinous or albuminous parts, its sum of increase keeping pace with the increase of organic matter; it is produced, and producing in all parts of the waters, the sum of local production depending upon local action manifest in living bodies, or the moving forces within the waters. In localities of the Red Sea its secretions of sand obtain their characteristic form and qualities from the peculiar orders, genera, and species from which, in decomposition of their parts, it is produced; thus, where the mollusca aggregating in quantities are of delicate structure, their organic particles in decomposition on the shores, form an exceeding by fine white sand; this is particularly exemplified in the decomposition of crenellidæ, mytellidæ, pectenidæ, ostreidæ, hallotidæ, and other orders. Thrown upon the shores by the incessant action of the waves, and in still greater quantities by tempests, the action of the vertical sun soon causes them to decompose; the hydrogen being carried off by the oxygen of the atmosphere, the carbon and lime in union separating from the cartilagenous and outer epidermis, which, uniting with the oxygen in decomposition, become converted into sand.

Again, where the ostreidæ, spondylydæ, tredacnidæ, and other mollusca, of more consolidated texture, are thrown by tempests upon the elevated reefs or plains, other results are produced; instead of decomposing, as they invariably do, in immediate proximity with the waters, they gradually consolidate in their parts, the abstraction of their hydrogen having no other effect than to cause the prominences and angular portions of the mollusca to fall off, the remaining portion becoming consolidated as a fossil in entirety, maintaining its outward configuration, through its series of changes, although, generally, the expansion caused by excessive heat, as also the abstraction of certain proximate compounds by oxygen, causes them to break into pebbles, without any definite form, and each fractional part passing through the same changes as the one whole would do.

Such is the manifestation of the causes of effects produced as sands and pebbles on shores. Within the waters the silicious aggregates form, or they do not form, in the death, and subsequent change, of the organic body, the nature of these changes being decided by local influences; thus, the animals and plants, more decidedly calcareous, decompose, and form beds of marl, in like manner as the tree, or the animals imbedded in terrestrial earth, becomes converted into earth. Sometimes, the organic body, after the cessation of life, wholly, or in decomposition, unites with the consolidated structure, built by the stony polypidoms, and, in the increase of the building, becomes enveloped therein, and in this union forms one consolidated body. In the lower depths of tropical seas, and in all the colder regions of the waters, where the polypes of simple gelatinous and albuminous contexture are most abundantly manifest, there the sands so constantly accumulate with accumulating life, governed, in their distribution, by the tides, by local accretions, and local depositions.

Testacea, in death and decomposition, also afford vast quantities of matter, which, under the proper local influences, become converted into silica, the change in the organic body, after the cessation of life, being equally dependent on local influences. In and throughout the vast extent of oceanic production, silica, the constituents of which are in the organic body, constitutes the bulk of aggregate of the whole, uniting, by its plastic qualities, the living and the dead; in after production, it is one of the most important agents in the work of change, and in the constitution of many terrestrial organic bodies. It is non-metallic, having, for its bases, organic matter, to which is united, oxygen in fixed proportions; it is a perfect result, produced by Nature in various ways, as will be developed hereafter.

In the present Number I cannot do more than give this slight notice of silica, calcium, and other important compounds, which, in union with each other, constitute so vast a portion of the consolidated matter of this planetary body; but, in describing hereafter the phenomena produced by these combinations, assisted by the elementary principles, I shall use my endeavours to prove the very important axiom laid down, that all aggregate matter is produced in the origin, decomposition, and change, of organic bodies, and primarily of, and from, the elementary principles. In speaking of calcium, Dr. Buckland, in his compilation, termed the *Bridgewater Treatise*, remarks—"It is a difficult problem to account for the source of the enormous masses of carbonate of lime that compose nearly one-eighth part of the superficial crust of the globe; but, until it can be shown that these animals have the power of forming lime from other elements, we must suppose that they derived it from the sea, either directly, or through the medium of its plants." There are some philosophic truths so plainly, so extensively, manifest to the senses, as to carry the proof and conviction with them—and such, indeed, are the phenomena above enumerated; the powers of human art cannot produce all the phenomena developed by the chemical action of life, but, as is instanced in ammonia, it produces enough to convince the philosopher, that the primary base of the animal organisation is a result of simple elementary union, not belonging primarily to the waters, but engendered by the chemical and mechanical action, manifest in the living body, within the waters. The union of elements in their varying proportions, must, of necessity, produce perfect mathematical results, being triple compounds, or three bodies in one, or in definite proportions of each; and the combinations of these results with the elements, must also, of necessity, produce other results, varying, in like manner, in their quantities and qualities. All the phenomena of this planet speak of a beginning, and of progression, gradual, varying, but certain; the order of precedence is laid down by Nature—man cannot controvert it, nor can he, by metaphysical subtilties, break through the unerring and manifest chain of evidence; the mind of man is filled with inventions, but Nature cannot err. The ocean is the general receptacle of oceanic bodies, and the fountain from whence they came; but life, and the phenomena consequent on life, alter the primary disposition of the medium in which they are placed, by manifest chemical change of the elements of the waters and the air. All the enormous masses of carbonate of lime, as the larger aggregates testify, by the nature of their material, are exclusively oceanic, and there is a broad line of separation between this and terrestrial matter, for the latter is a consequence of the former, produced by elemental action exercised thereon, and the organic bodies developing proximate principles and compounds, of like nature with oceanic organic bodies, as well as proximate principles and compounds peculiar to themselves. The ant developes formic acid; the apple developes malic acid—each are peculiar to these [illegible] bodies; they are not derived from the soil on which they [illegible]; in like manner, calcium is secreted by oceanic and terrestrial [illegible] being a result of chemical admixtures, organic or [illegible] salt. Dr. Buckland designates the polypus, which [illegible] portant a part in the economy of production, "the [illegible] of the ocean." It would have been much more correct to have [illegible] the epithet of pioneers to PRODUCTION, for [illegible] primary causes of numerous phenomena, forming ever [illegible]

the earth the bases of terrestrial matter, and being the source from whence numerous terrestrial orders, genera, and species, derive their being, and are enabled (aided by the elements) to live and propagate their species.

Of the order and disposition of matter, as primarily manifest in the ocean, while free from terrestrial depositions and admixtures, the limestone rock, as formed beneath the waters, is NEVER stratified while it remains in this state, for, whether the fabric, consolidating as it gradually rises to the surface of the waters, be built by one particular species, or by ten thousand, the same result is manifest—a ponderous aggregate mass. It is true, that local disturbances often cause a total cessation of action, and thus the increase of the consolidated mass may be prevented for a time by a sudden eruption of calcareous matter, or comminated particles of organic bodies, and a stratum is formed upon the underlying bed of rock; but here the effect is manifest, until the entire body becomes elevated above the surface of the waters, and the subject of new influences, the overlying materials changing according to the nature of local affections, the limestone becoming simply more crystalline, or intimately united in its atomic parts. Sometimes the beds formed within the valleys and troughs of the seas, from occasional irruptions of matter, differing from their general composition, present a stratified appearance, but such is seldom the case out of the action of the currents. In fact, the phenomena of strata are but few, consisting in general of beds and hills of sands, or decomposed and decomposing bodies, loosely or compactly united in their parts. It is after the oceanic accumulations appear above the waters that the innumerable phenomena attached to, and proceeding from, terrestrial matters are developed: thus, in those localities where disturbing forces are manifest, and terrestrial matters are periodically, or continually, deposited within the ocean, the beds are stratified, and are formed by sedimentary depositions alone, the polypes being unable, from these disturbing causes, to extend their edifice, being, in their generations, covered with terrestrial matters.

Donati speaks of the bed of the Adriatic as consisting of calcareous matter, several hundred feet in thickness; the bed of the Mediterranean varies in its formations, as the conjoint union of terrestrial and oceanic matter may determine, the sum of each constituting the particular result. The Atlantic, Indian, and Pacific Oceans, are more or less governed in their formations by these conjoint influences, each being in localities comparatively exempt from them; but in all parts of the ocean the like phenomena of production is manifest, not as being exclusively oceanic, but as being primarily produced within the latter, and, in the present era, contemporaneously developed in both, cause assimilating with cause, effect with effect.

MEETINGS OF SCIENTIFIC BODIES.
IN THE ENSUING WEEK.

SOCIETY.	PLACE OF MEETING.	DAY.	HOUR.
Royal Botanical	Regent's-park	Saturday	4 P.M.
Royal Geographical	3, Waterloo-place	Monday	8½ P.M.
British Architects	16, Grosvenor-street	Monday	8 P.M.
Medical	Bolt-court, Fleet-street	Monday	8 P.M.
Linnæan	Soho-square	Tuesday	8 P.M.
Horticultural	21, Regent-street	Tuesday	3 P.M.
Civil Engineers	25, Great George-street	Tuesday	8 P.M.
London Electrical	Adelaide-street	Tuesday	8 P.M.
Chemical	47, Leicester-square	Tuesday	8 P.M.
Society of Arts	Adelphi	Wednesday	7½ P.M.
London Institution	Finsbury-circus	Wednesday	12 P.M.
Microscopical	21, Regent-street	Wednesday	8 P.M.
Royal	Somerset House	Thursday	8½ P.M.
Antiquaries	Somerset House	Thursday	8 P.M.
Royal Institution	Albemarle-street	Friday	8½ P.M.
Geological	Somerset House	Friday	1 P.M.
Botanical	20, Bedford-street, Cov.-g.	Friday	8 P.M.
Royal Asiatic	14, Grafton-street	Saturday	2 P.M.
Westminster Medical	Exeter Hall	Saturday	8 P.M.
Mathematical	Crispin-street, Spitalfields	Saturday	8 P.M.

*** The soirées of the President of the Geological Society (R. I. Murchison, Esq.) are announced to commence at his residence in Belgrave square, on Saturday, the 26th inst.

PUBLIC COMPANIES.

MEETINGS.

Candonga Mining Association	George and Vulture Tavern	Feb.	12	1.
Maryport and Carlisle Railway	Aspatria		12	1.
Great Wh. Charlotte Mining Co.	George and Vulture Tavern		14	1.
Greenwich Railway Co.	London Tavern		14	1.
Birmingham & Derby Junc. R'way	Waterloo Rooms, Birmingham		16	12.
Manchester & Salford Water-works	Office, Manchester		16	11.
Garnkirk and Glasgow Railway	George Hotel, Glasgow		16	2.
Newcastle General Shipping Co.	Newcastle-upon-Tyne		16	1.
Bank Reversionary and Loan Soc.	London Tavern, Bishopsgate-st.		17	12.
Chester Railway	George and Vulture Tavern		17	2.
Australian Agricultural Co.	12, King's Arms-yard		18	2.
Birmingham & Gloucester R'way	Bell Hotel, Gloucester		18	1.
Midland Counties Railway	Station, Derby		18	1.
General Steam Navigation Co.	69, Lombard street		22	3.
St. Marylebone Joint Stock Bank	Boar and Castle Hotel, Oxford st.		22	6.
Eastern Counties Railway	Station, Shoreditch		22	1.
Thames Haven Dock and Railway	1, St. Mildred's-court		23	12-1.
Asylum Life Assurance Company	70, Cornhill		23	1.
British Shipping Company	George and Vulture Tavern		24	1.
Great Western Railway Co.	Office, Prince's street		24	12.
Irish Waste Land Improvement Co.	12, Old Broad street		24	12.
Durham County Coal Company	Sun Inn, Darlington		24	12.
Copiapo Mining Company	22, Austinfriars		24	1.
Southampton Dock Company	19, Bishopsgate street within		25	2.
Hayle Railway Company	Rectory House, London-wall		25	1.
Hull and Selby Railway	Town-hall, Kingston-upon-Hull		28	12.
North Midland Railway	Leeds Station		28	1.
Hungerford & Lambeth Susp. Bdge.	6, Villiers street, Strand		28	2.
London and Blackwall Railway	London Tavern		28	11-12
London Grand Junction Railway	6, Basinghall-street		28	1.
Arigna Iron and Coal Co.	Office, 9, Liverpool-street	March	1	1.
Thames Tunnel	London Tavern		1	1.
West Cork Mining Company	George and Vulture Tavern		1	1.
London and Westminster Bank	Bank, Lothbury		2	1.
Redmoor Consolidated Mining Co.	Office, 45, Finsbury square		3	6.
Bristol and Exeter Railway	Bristol		3	12.
Imperial Brazilian Mining Ass'n.	London Tavern		8	2.
Bath Life Assurance Company	New London Hotel, Bridge-street		9	12.

CALLS.

London and Blackwall Railway	2l.	Feb.	14	London & Westminster Bank.
Redmoor Consol. Mining Co.	10s. per sh.		14	Brompquet and Co.
South Consolidated Mining Co.	7s. 6d.		21	Williams and Co.
Polgooth Tin and Copper Co.	10s. per sh.		21	Brompquet and Co.
De Dunstanville Mining Co.	10s.	March	7	19, Birchin lane.
Dennawoodie Copper Mining Co.	10s.		8	19, Birchin lane.
East Fowey Mining Company	5s.		14	6, St. Mildred's-court.
Northern Coal Mining Company	2l.		19	Newcastle Joint-Stock Bank.
Irish Waste Land Im. Society	1l.	April	13	As former calls.
Cambrian Iron & Spelter Co.	2½l.		17	As former calls.

DIVIDENDS.

Wicklow Copper Mines	16 per cent.	Office, Dublin	Feb. 14.
British Colonial Bk. & Loan Co.	6 per cent.*	15, St. Swithin's-lane	March 7.

[For list of Joint-Stock Banks see leading article.]

METEOROLOGICAL JOURNAL, 1842.

Thursd.	3	[illegible]	[illegible]	Monday	7 [illegible]
Friday	4	[illegible]	[illegible]	Tuesday	8 [illegible]
Saturd.	5	[illegible]	[illegible]	Wednes.	9 [illegible]
Sunday	6	[illegible]	[illegible]		

[illegible]

CHARLES HENRY ADAMS.

NOTICES TO CORRESPONDENTS.

THE IRON TRADE.—The statement of the Number of Furnaces in and out of Blast is postponed, in expectation that, by our next, we shall receive such information as will render the table perfect, and thus form, in a concise manner, a complete view of the present state of the iron trade.

Mr. C. Hood, on the Combustion of Coal, and the Use of Hot Air in Furnaces—Mr F. Parkin, on Railway Engineering—"A. B.," on Spelter Manufacture—Mr Martin, on Explosions of Steam-Boilers, with several others, necessarily omitted, will be inserted in our next.

If the directors of the Diamond Mine will forward us their weekly reports, duly authenticated by the agent's name, they shall be regularly inserted in the Journal.

We are in possession of some valuable statistical information, illustrative of the progress of mineral industry in several continental countries, which we shall lay before our readers as opportunity offers.

The first portion of the paper, inserted in another part of this day's Journal, on the properties of Hot and Cold Blast Cast-Iron, is extracted from the Glasgow *Practical Mechanic*, which publication, we are glad to observe, continues to be conducted with so much spirit and talent, as fully to merit the high commendation we passed on the earlier Numbers.

THE MINING JOURNAL,
Railway and Commercial Gazette.

LONDON, FEBRUARY 12, 1842.

The general application of wire rope to mining, railway, and shipping purposes, induces us to return to the subject; in treating on its economy in the first cost, its safety, diminution of size and weight, as compared with hempen rope, and its durability, in which the main saving may be said to consist. A paper, written by M. LE BLANC (Chief Engineer of Bridges and Roads of Great Span), on the Comparative Advantages of Wire Rope and Bar-iron in the construction of Suspension-bridges, illustrates the great superiority which the former possesses over the latter in point of strength and in diminution of cost, and to which we may add, as further evidence of the advantages possessed by the wire rope over hempen rope, the letter of Mr. ANDREW SMITH, the patentee, which we have also inserted in our present Number. Mr. SMITH, in his letter, principally confines himself to the application of wire rope to standing rigging, and, by the comparative sizes, weights, and cost of wire rope, hempen rope, and chain, demonstrates its great superiority. It is, however, with reference to mines and collieries, as well as on railways and incline planes, that we are disposed to consider its usefulness, which is rendered evident by its adoption in several of the mining districts, including the county of Cornwall, the North, in some of the Midland districts, and also in Ireland.

We have seen several reports from parties who have had the wire rope in use for a considerable time, who speak in the highest terms of the advantages it possesses over hempen rope or chain for mining and colliery purposes; and the employment of it on the London and Blackwall, and other lines of railway, affords conclusive evidence of the value attached to the invention. The experiments made at Woolwich, by direction of the Lords of the Admiralty, noticed by us at the time, it will be remembered, were of a highly satisfactory nature, and its increased application to mining and other purposes, since that period, fully confirms the opinions we then expressed.

It will be observed, by reference to another column, that the adjourned sale of tin by the Miners' Company came off on Thursday, when the opposition to the measure, and the disinclination of parties to purchase, were manifested by the fact, that not one single offer was made throughout the sale, although a highly respectable and influential body of gentlemen connected with the trade were present. We insert a letter on the subject, from a correspondent who signs himself "One of the Sufferers," but how he has suffered we feel at a loss to make even a guess, without he would wish us to set him down as one of the private smelters, in which case he would, perhaps, illumine us, by showing that the price paid by them for black tin at the ticketings during the past quarter has been higher than the market price of white tin would justify, or, in other words, that the private smelter has been working to the loss, through the system adopted by the company. We will endeavour next week to give a comparative view of the prices of black and white tin for the past twelve months. The arguments and the conclusions at which our correspondent arrives, might be valuable, if the data were admitted, for which we are not prepared. The letter will, however, doubtless elicit further correspondence, which we are anxious to receive—for the Miners' Company works either for good or ill, and the sooner the fact is demonstrated the better for the miner, as well as all concerned.

The contrast afforded by the course pursued by our Government, when placed in juxta-position with that of France, says but little in favour of the spirit and enterprise of this country were Government measures, as regards railway communication, to be alone considered. We are fully sensible of the difficulty attendant on the adoption of any measure which might tend to interfere with individual enterprise, and the vast capital expended within the past few years, in the construction of the several lines of railway, afford conclusive evidence that the aid of Government is uncalled for, except under peculiar circumstances—while in France any great operation must emanate with the Government, there not being the spirit abroad which is displayed in this country, and to which is to be attributed the many joint-stock associations for mines, railways, banks, docks, canals, and other undertakings requiring a large outlay. We have been led to the consideration of this subject from the nature of the reply of LORD ELIOT to an inquiry made in the House of Commons during the past week, on subject of railways in Ireland; from which we gather that the various plans laid before Government have not yet received the necessary consideration, adding, that he believed Ministers were not disposed to give their sanction to any plan that would involve any advance of the public money, or that would saddle this country with any expense for carrying out the object in view—but that Government would be prepared to give every encouragement to private enterprise.

Let us now turn to the course pursued by the French Government, as relates to railways in France. A project has been brought forward in the Chamber of Deputies, by the Minister of Public Works, for the formation of five different lines of railroad, the expense of which is estimated at 400,000,000f. Paris forming the one terminus—the several lines are enumerated as leading to the frontier of Belgium by Lille and Valenciennes—to England by a point of the coast of the Channel, which shall be determined hereafter—to the frontier of Germany by Strasburg—to the Mediterranean by Lyons, Marseilles, and Cette—and to the ocean by Bordeaux and Nantes. These several lines, it is contemplated, are to be executed by the co-operation of the state, of the departments and communes interested in them, and of private industry, in such proportions as may hereafter be determined.

It will be seen by this brief notice of the intentions of our own Government and that of France, how striking is the contrast; and here we are disposed to enter on the analogy which we consider exists, as relates to railways in Ireland and railways in France, which leads us to the conviction that our Government would do well to follow the example set by our continental neighbours, in affording assistance to Ireland, where there is an acknowledged dearth of capital and enterprise, and in which country the construction of railroads, on an extended scale, cannot be calculated upon, if left to individual subscription of the funds required for such a purpose. In England, we admit that any proffered aid on the part of Government would, doubtless, be rejected, for there is not only capital ample for the object in view, but there is an independent energetic spirit which pervades men's minds, and which renders such assistance uncalled for.

In France the Minister clearly sees, that if the construction of railroads was to be left to individual industry, there would be but little chance of such progress being made, as, with the rapid strides making in this country, America, Belgium, &c., may be considered indispensable, so as to keep pace with modern improvements, and at the same time to insure to that nation correspondent advantages with those enjoyed by other countries—hence the introduction of a Government measure, with the view of carrying out with spirit the proposed system, and which, in our opinion, is equally applicable to the Sister Isle, for we feel assured, that, with increased facilities, there is no country which offers prospects so favourable as that of Ireland for an increase of trade and inter-communication, and from which remunerative returns would assuredly result.

The periodical meetings of the different joint-stock banks again show those useful undertakings to be, with but few exceptions, in a particularly healthy state—the dividends averaging a higher rate than those obtained upon any other description of vested capital; while the general terms of satisfaction expressed by proprietors, with reference to the explanations elicited as to the situation of their affairs, the course of management pursued, &c., must be highly gratifying to all concerned in those institutions. We subjoin a list of dividends declared at the meetings that have already taken place, and shall, on their conclusion, give them entire in a tabular form:—Birmingham Banking Company, 12½ per cent. per annum; Bilston District Bank, 7 per cent.; Bank of British North America, 24s. per share; Bradford Banking Company, 10 per cent.; Burton, Uttoxeter, and Staffordshire Bank, 10 per cent. per annum; Carlisle and Cumberland Bank, 7½ per cent.; Dudley and West Bromwich Banking Company, 10 per cent.; London and County Bank, 5 per cent.; London Joint-Stock Bank, 3 per cent. for the half-year; Liverpool Union Bank, 5 per cent. for half-year; Lancaster Banking Company, 10 per cent.; Leicestershire Banking Company, 12 per cent.; Messrs. Moore and Robinson's Nottinghamshire Banking Company, 10 per cent.; National Bank of Ireland, 6 per cent.; National Provincial Bank of England, 6 per cent.; Newcastle-upon-Tyne Joint-Stock Bank, 6 per cent.; Newcastle, Shields, and Sunderland Union Banking Company, 10 per cent.; Northamptonshire Union Bank, 7s. per share; Sheffield and Rotherham Bank, 10 per cent.; Shropshire Banking Company, 5 per cent. for the half-year; South Australian Banking Company, 6 per cent.; Sheffield Banking Company, 8½ per cent.; Union Bank of Australia, 10 per cent.; West of England and South Wales District Bank, 3 per cent. for the half-year; Wakefield and Barnsley Union Bank, 8 per cent.; Whitehaven Bank, 15 per cent.; Wolverhampton and Staffordshire Banking Company, 10 per cent. for the half-year; York Union Bank, 10 per cent.

ADJOURNED QUARTERLY SALE OF TIN.

The adjourned sale from the 27th ult., of tin belonging to the Miners' Company, was appointed to take place on Thursday last, when the several lots, consisting of 1165 blocks common tin, 750 blocks refined, 515 blocks tin plate grain tin, 145 blocks best grain, and 10 tons ingots common, were put up, without obtaining a single offer. We never witnessed so determined and dogged a silence as that observed throughout the proceedings—Mr. Short, to whom the business of the day was committed, being the only one whose voice was heard from the commencement until the close of the sale (if such it can be termed), when not a single block was sold. It was apparent from the moment of Mr. Short mounting the rostrum that the highly respectable and numerous assemblage had resolved on adopting one course—some being probably induced to attend from motives of curiosity, others to watch the proceedings, and those in want of tin being anxious to see the effect which the sale would have on the price of the article, being satisfied that the entire stock would not be sold off. The result was, as already stated, that all the lots were bought in, the nominal, or upset prices, being common 65s. to 65s. 6d., refined 72s. 6d. to 73s., best grain 82s., tin plate grain tin 75s. 6d. to 76s., ingots 65s. 6d. to 66s. On the close of the sale Mr. Short announced that, as the whole had been bought in, he was prepared to treat with parties by private contract for any number of the lots; upon which Mr. Forster wishing to understand distinctly that by such announcement the company had determined on not trying the effect of a further public sale, Mr. Short, in reply, stated that the directors were in no way shackelled by the announcement he had then made, as they were at liberty to sell by private contract or by public sale, and that their future course would be determined by circumstances; he gave no pledge, but had only to repeat, that at present he was open to negotiate with parties by private contract. Thus terminated the proceedings of the day. The room was well attended, and several influential merchants and brokers were present. We understand that subsequent to the sale the whole of the refined tin, tin plate grain, and best grain, lying at Truro and Penzance, was disposed of by private contract.

STATISTICS OF THE METAL TRADE.

It appears, from the official returns, that the quantity of foreign and British metals exported from London and Liverpool, for the years ending 31st December, 1840 and 1841, are as follow:—

		1840.	1841.	Increase.	Decrease.
Iron in bars, hoops, &c.	tons	107,387	137,138	29,751	—
Steel	„	1,994	3,439	1,445	—
Copper in cakes, &c.	„	3,434	3,547	113	—
Copper in sheets and nails	„	6,161	5,035		1,126
Tin in blocks and bars	„	1,879	3,145	1,266	—
Tin plates	boxes	191,716	216,874	25,158	—
Lead in pigs, sheets, &c.	tons	9,021	8,420		601
Spelter	„	3,471	1,821		1,650
Quicksilver	lbs.	2,303,909	2,812,291	508,382	—

By the account of duty paid on metals for home consumption at London, Liverpool, Hull, and Bristol, from 1st January, 1839, 1840, and 1841, it appears that iron and spelter have been imported to the following extent:—

		Years.	London.	Liverpool.	Hull.	Bristol.	Total.
Iron	tons	1839	2169	1333	14,787	276	18,516
„	„	1840	1800	910	9,136	223	12,127
„	„	1841	366	841	15,363	161	17,030
Spelter	„	1839	3483	1090	37	151	4,760
„	„	1840	4011	412	78	124	4,625
„	„	1841	3110	232	40	101	3,483

while the total of tin for the three years (at the four ports) only amounted to 8 tons; lead, 34 tons; copper, 90 tons; and that of quicksilver, entered at London is as follows:—1839, 331,247 lbs.; 1840, 227,379 lbs.; 1841, 310,689 lbs.

The following is a general summary for the three years:—

		1839.	1840.	1841.	Total.
Iron	tons	18,516	12,127	17,030	48,324
Steel	„	23	4	27	54
Copper	„	18	12	60	90
Tin	„	1	—	7	8
Lead	„	12	7	15	34
Spelter	„	4,760	4,625	3,483	12,868
Quicksilver	lbs.	331,247	227,379	310,689	869,314

The stocks of foreign metals at London, Liverpool, Hull, and Bristol, on the 1st of January, 1840, 1841, and 1842, were—

		Years.	London.	Liverpool.	Hull.	Bristol.	Total.
Iron	tons	1840	2,100	600	1800	273	4,673
„	„	1841	1,800	350	2400	200	4,500
„	„	1842	1,200	1250	2000	50	4,400
Copper	„	1840	—	1250	—	—	1,250
„	„	1841	—	800	—	—	800
„	„	1842	15	225	—	—	240
Tin	„	1840	20	50	—	—	70
„	„	1841	75	70	—	—	145
„	„	1842	—	—	—	—	—
Lead	„	1840	1000	250	—	—	1,250
„	„	1841	50	300	—	—	350
„	„	1842	25	100	—	—	125
Spelter	„	1840	3,200	100	—	—	3,300
„	„	1841	1,000	60	—	—	1,060
„	„	1842	2,100	—	—	—	2,100
Quicksilver	lbs.	1840	350,000	22500	—	—	372,500
„	„	1841	200,000	—	—	—	200,000
„	„	1842	150,000	—	—	—	150,000